(19) **Japan Patent Office** (JP)

(11) Japanese Unexamined Patent Application Publication Number

(12) Japanese Unexamined Patent Application Publication (A)

H1-184691

(51) Int. Cl.[4]	Identification codes	JPO file numbers	(43) Publication date: July 24, 1989
G 11 B 27/00		C-8726-5D	
23/30		E-8622-5D	

Request for examination: Not yet requested Number of inventions: 1 (Total of 3 pages)

(54) Title of the invention	ELECTRONIC CASSETTE DEVICE	
	(21) Japanese Patent Application	S63-2608
	(22) Date of Application	January 11, 1988
(72) Inventor	Nobukazu Doi	Hitachi Ltd. Central Research Laboratory 280 Higashi-Koigakubo, Kokubunji-shi, Tokyo
(72) Inventor	Moriji Izumida	Hitachi Ltd. Central Research Laboratory 280 Higashi-Koigakubo, Kokubunji-shi, Tokyo
(72) Inventor	Seiichi Mita	Hitachi Ltd. Central Research Laboratory 280 Higashi-Koigakubo, Kokubunji-shi, Tokyo
(72) Inventor	Hiroyuki Hanyu	Hitachi Ltd. Tokai Works 1410 Oaza Inada, Katsuta-shi, Ibaraki
(71) Applicant	Hitachi, Ltd.	4-6 Kanda-Surugadai, Chiyoda-ku, Tokyo
(74) Agent	Patent Attorney Katsuo Ogawa	And 1 other

SPECIFICATION

1. TITLE OF THE INVENTION

ELECTRONIC CASSETTE DEVICE

2. SCOPE OF PATENT CLAIMS

1. An electronic cassette device in which a cassette package is provided with an element such as memory or a computing element, a backup power source, and a means for connecting signals and a power source between the cassette package and a recording and reproduction deck, and the recording and reproduction deck is provided with a recording and reproduction device, an element such as memory or a computing element, a main power source, a means for connecting signals and a power source between the element of the cassette package, the backup power source, and the recording and reproduction deck, and a signal input terminal for controlling the elements of said cassette package and recording and reproduction deck.

3. DETAILED DESCRIPTION OF THE INVENTION

INDUSTRIAL FIELD OF APPLICATION

The present invention relates to a cassette tape recorder or a disk device, for example, using a cassette package. In particular, it relates to the structure and configuration of a cassette package and the configuration of a recording and reproduction deck.

PRIOR ART

Types of recording and reproduction devices using cassette packages include cassette tape recorders, which record and reproduce audio signals, and video tape recorders, which record and reproduce video signals. These devices comprise a cassette tape package and a recording and reproduction deck. Tape is wound around two reels in the cassette package, and the recording and reproduction deck records and reproduces signals by applying a head to the tape between the reels of the cassette package.

PROBLEM TO BE SOLVED BY THE INVENTION

Recording and reproduction devices using such a cassette package have the common drawback that while their recording capacity is large, their access speed is slow. For example, access in a video tape recorder is ordinarily achieved by fast-forward reproduction or the repetition of tape winding reproduction. From the perspective of its relationship with tape that is drawn and wound around a cylinder, fast-forward reproduction causes a large tape feed load, and the speed is limited to approximately ten times the normal reproduction speed, so the access time becomes long.

On the other hand, with methods based on the repetition of tape winding reproduction, it is necessary to repeat the above operation multiple times until the target position is detected, which results in increases in access time.

MEANS FOR SOLVING THE PROBLEM

In order to solve the problems described above, in the electronic cassette device of the present invention, a cassette package is provided with an active element such as memory or a computing element, a backup power source, and a means for connecting signals and a power source between the cassette package and a recording and reproduction deck inside and on the surface of the cassette package, and the recording and reproduction deck is provided with a recording and reproduction device, an active element such as memory or a computing element, a main power source, a means for connecting signals and a power source between the active element of the cassette package, the backup power source, and the recording and reproduction deck, and a signal input terminal for controlling the active elements of the cassette package and the recording and reproduction deck.

OPERATION

With the configuration described above, the present invention solves the aforementioned problems by inputting and outputting signals and a power source between the active element of the cassette package, the backup power source, the active element of the recording and reproduction deck, and the main power source. For example, in a device such as a video tape recorder, tape addresses corresponding to representative screens of program recorded on a cassette tape are stored in the memory inside the active element described above. At this time, a specific program is selected based on the screen stored in the high-speed accessible active element described above, and the tape address position should be rewound by winding the reels. Because the load when the tape is wound is much smaller than the load at the time of fast-forward reproduction, it is possible to wind the tape at a speed several times faster than that of fast-forward reproduction, and the access time can be dramatically reduced as a result.

EMBODIMENT

An embodiment of the device of the present invention will be described hereafter using the drawings. Fig. 1 (a) shows the structure of a cassette package 1 of the device of the present invention. This is abbreviated as package 1 hereafter. Symbol 2 is an active element made of memory or a computing element, which is placed in a low position around package 1, for example, so that it does not interfere with the running of the tape. Symbol 3 is a backup power source for temporarily holding the memory content of active element 2, which is placed in a corner part of package 1, for example, so that it does not interfere with the running of the tape. When using non-volatile memory, backup power source 3 is not particularly necessary. Symbol 4a is a terminal for connecting signals and a power source between package 1 and a recording and reproduction deck. Because this makes contact with connection terminal 4b on the recording and reproduction deck side, it is necessary to increase its physical strength by combining it with an auxiliary plate. Symbol 5 is wiring for electrically connecting active element 2, backup power source 3, and connection terminal 4a, and this is printed on package 1.

Fig. 1 (b) is a block diagram showing the configuration of the recording and reproduction deck. Symbol 4b is a terminal for connecting signals and a power source between the recording and reproduction deck and package 1. Symbol 10 is a recording and reproduction device comprising components such as a head, a preamp, and an equalizer. Symbol 11 is an active element made of memory or a computing element. Symbol 12 is a main power source used to drive active element 11 and active element 2 on the package 1 side and to charge backup power source 3. Symbol 13 is wiring for electrically connecting active element 11, main power source 12, and connection terminal 4b.

Next, a description of the high-speed access operation in the case in which aforementioned package 1 and a recording and reproduction deck are used will be given.

Representative still images of programs recorded in package 1 and the data addresses at which the programs begin are stored in active element 2. As shown in Fig. 2, still images 21a-2na and tape addresses 21b-2nb of multiple programs can be stored. Address 30 indicating the number of the pair will hereafter be called the search address. First, a description of the still image registration operation will be given. The tape address corresponding to a representative still image among the images recorded or reproduced by recording and reproduction device 10 is stored in a search address designated by input terminal 14a of active element 2 through connection terminals 4b and 4a. Here, because the image at the position of tape address 2ib and still image 2ia do not necessarily match, the system is configured such that the settings for still image 2ia and tape address 2ib can be made independently. Therefore, it is not particularly necessary for still image 2ia to be the image stored in package 1, and a signal inputted into

recording and reproduction device 10 may, of course, be stored.

At the time of high-speed access, tape address 2ib corresponding to still image 2ia of search address i designated by input terminal 14a is read out from among tape addresses 2ib-2nb corresponding to still images 2ia-2nas stored in active element 2. Still image 2ia is forwarded to recording and reproduction device 10 and is outputted to a monitor. Here, all of the registered still images 2ia-2na can be viewed by changing search address 23, and a specific program can be selected as a result. Tape address 21b is forwarded to active element 11 and stored. Input terminal 14b is a signal input terminal for designating the selected program, and at recording and reproduction device 10, the winding of the tape is controlled based on this signal such that the tape address stored in active element 11 matches tape address 21b of package 1 detected by recording and reproduction device 10. If the tape addresses match, recording and reproduction device 10 is set to the reproduction state.

The above embodiment was described for image signals, but the same operation could, of course, also be established for audio signals. In addition, while the above embodiment relates to a cassette recorder, the same operation could, of course, also be established with a disk device.

EFFECT OF THE INVENTION

With the present invention, the search time is simply the access time of the active element and the winding time of the tape, so the access time can be dramatically reduced in comparison to searches based on conventional normal reproduction or fast-forward reproduction.

4. BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 (a) and (b) are drawings showing the basic structure of the device of the present invention, and Fig. 2 is a drawing showing the stored content of the active element in Fig. 1 (a).

1...cassette tape package, 2, 11...active elements, 3, 12...power sources, 4a, 4b...connection terminals, 5, 13...wiring, 10...recording and reproduction device.

Agent Patent Attorney Katsuo Ogawa [seal illegible]

[see source for figures]

Fig. 1

(a)
1 cassette tape package
2 active element
3 power source
4a connection terminal
5 wiring

(b)
10 recording and reproduction device
11 active element
12 main power supply
13 wiring
14a, 14b input terminals
4b connection terminal

Fig. 2

21a-2na still images 1-n
21b-2nb tape addresses 1-n
30 search address

である必要は特になく、もちろん記録再生装置１０に入力する信号を記憶させてもよい。

高速アクセス時は、識別端子２に記憶された静止画像２１ａ～２ｎａと対応したテープアドレス２１ｂ～２ｎｂの中で、入力端子１４ａで指定する検索アドレスｉの静止画像２１ａと対応したテープアドレス２１ｂを読み出す。静止画像２１ａは記録再生装置１０に転送し、モニタに出力する。ここで、検索アドレス２３を変えることで登録静止画像２１ａ～２ｎａを全て見ることができ、その結果特定の画像が選択できる。テープアドレス２１ｂは識別端子１１に転送し、記憶される。入力端子１４ｂは選択した希望を指定するための信号入力端子であり、記録再生装置１０ではこの信号に基づき識別端子１１に記憶されたテープアドレスと記録再生装置１０で検出するパッケージ１のテープアドレス２１ｂとを一致させるようにテープの巻き取りを制御する。テープアドレスが一致したら、記録再生装置１０を再生状態にする。

上記実施例は画像信号に対するものであったが、音声信号に対しても同様のことが成立することは言うまでもない。また、上記実施例はカセットテープレコーダに関するものであったが、ディスク装置においても同様のことが成立することは言うまでもない。

【発明の効果】

本発明によれば、検索時間は識別端子のアクセス時間とテープの巻き取り時間で決め、従来の逐次再生あるいは早送り再生による検索に比べアクセス時間を大幅に短縮することが出来る。

4．図面の簡単な説明

第１図（ａ），（ｂ）は本発明装置の基本構造を示す図、第２図は第１図（ａ）の識別端子の記憶内容を示す図である。

１…カセットテープパッケージ、２，１１…識別端子、３，１２…電源、４ａ，４ｂ…接続端子、５，１３…配線、１０…記録再生装置。

代理人　弁理士　小川勝男